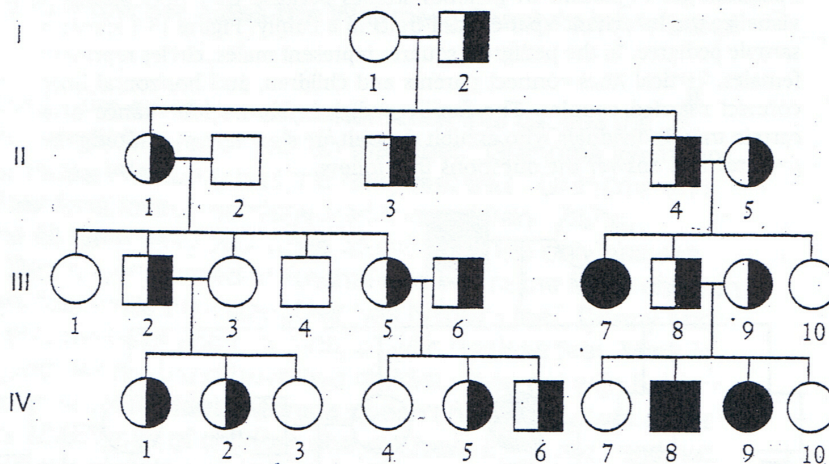


CHAPTER 14 PATTERNS OF HEREDITY

Section 14.2 Applied Genetics continued

Analyze the pedigree shown for sickle-cell anemia, a recessive blood disorder. Then answer the questions.



8. How many generations are represented in the pedigree? _____
9. In generation I, which parent is heterozygous for the recessive allele? _____
10. Which individual in generation II marries a spouse who is homozygous dominant? _____
11. In which generation does the first case of sickle-cell anemia appear? _____
12. Which generation contains the most male carriers? _____
13. Can two carriers produce an individual with sickle-cell anemia? _____
14. Can a normal homozygous individual produce offspring with sickle-cell anemia? _____
15. Which parents produce two children with sickle-cell anemia? _____

Chapter 13

The New Genetics

NAME _____

CLASS/SECTION _____

DATE _____

A. Pedigrees

Pedigrees are important in genetics studies because they help scientists visualize the inheritance patterns of traits in a family. Figure 13.1 shows a sample pedigree. In the pedigree, squares represent males, circles represent females, vertical lines connect parents and children, and horizontal lines connect married couples. The family pedigree shows inheritance of a certain trait. Individuals who exhibit the trait are shown in gray. Study the pedigree and answer the questions that follow.

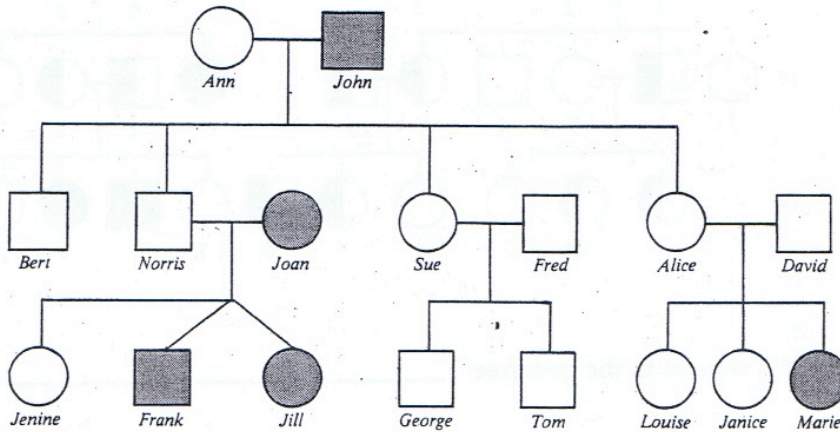


FIGURE 13.1

- Who is the uncle of Jenine, Frank, and Jill?

- For how many families are John and Ann grandparents?

- What is the family relationship between Jill and George?

- Who are Jenine's two uncles who married into the family?

- What relation is Louise to Fred?

- What relation is George to Joan?

- What relation is Sue to Louise?

As the genetic investigator, you need to map the hairy feet trait in the Walhberg family using a pedigree. Make sure to use the correct symbols for each person. Try and figure out the genotype under their symbol. Finally, make a pedigree on the paper provided to show the type of inheritance pattern for the Walhberg Family's hairy feet.

The Walhberg family has a rare genetic inheritance that causes the infected person to have a large amount of hair on their feet. Grandma Walhberg has hairless feet, but Grandpa Walhberg has the hairy feet trait. Grandma and Grandpa Walhberg, in their long loving marriage had five children. Danny, Donny, Mark, and Elaine all have hairy feet while Monica has the only hairless feet of all the children. Danny got married to Rachel and two of the three children (the two boys) have hairy feet while their daughter has hairless feet. Donny and his wife have four children, two boys and two girls, all with hairless feet. Mark is still single, while Elaine and her husband have two children, one girl with hairy feet and one boy without hair on his feet. Monica doesn't have hairy feet as we said earlier, but wonders what types of children she will have since her husband has hairy feet. They already have one daughter, but she doesn't have hairy feet.